CUTEC News

25 YEARS OF CUTEC – ANNIVERSARY CELEBRATION ON JUNE 11, 2015

EDITORIAL

CUTEC 2014: Most successful year since founding

Dear Reader,

As 2014 draws to a close, it is generally taken as a good opportunity to take stock of events over the past year. It has been a very successful year for CUTEC all in all. New contracts received were at their highest levels since the organisation's founding back in 1990. That is merely a cold statistic, of course, but what is the story behind it? Particularly noteworthy were three projects acquired by way of competitive tender:
Together with the Fraunhofer Institute for Systems and Innovation Research ISI and the Federal Institute for Geosciences and Natural Resources BGR, CUTEC was appointed by the German Federal Ministry of Education and Research (BMBF) to co-ordinate integration and transfer on its research programme "r4" relating to innovative technologies for resource efficiency for the supply of industrially key strategic raw materials.

Together with the Technical University of Clausthal, Harz regional companies H.C. Starck and Recylex and some 110 other partners from all around Europe, we have been designated the "Knowledge and Innovation Community (KIC) Raw Materials" of the EU's European Institute of Innovation and Technology.

And in co-operation with the Lower Saxony Energy Research Centre EFZN, the Leibniz University of Hanover and the Ostfalia Hochschule University of Applied Sciences, we were commissioned by the State of Lower Saxony Ministry of the Environment, Energy and Climate Protection to draw up the "Lower Saxony Energy Scenarios 2050" accompanying the Lower Saxony Round Table on Renewable Energy Use (a forum to discuss the so-called "Energiewende" shift in energy policy).

So it is evident that strategic alliances with partners of high repute pay dividends, and are indeed more necessary than ever, particularly for comparatively small centres of higher education, as a means of gaining a competitive edge on the international stage. In the course of the year we have also gained a number of new industrial partners, from global concerns to regional medium-size companies, and have expanded our operations on behalf of public agencies in the states of Baden-Württemberg and North Rhine-Westphalia. We have been further boosted by our enhanced presence at scientific and industrial conferences and congresses, as well as by the multiplicity and diversity of our publications.

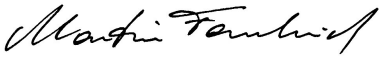
The core of the CUTEC brand of course remains technology development from the concept stage, through piloting, to industrial reality. This demands a sound balance between practicality and science. It is pleasing to report that almost all scientific staff are now also working towards their doctorates. Some will then doubtless utilise our institute as a springboard for their future careers. In this context, too, it is important to achieve a sound balance between continuity and renewal.

There are few things that cannot be improved further. Our aim for the coming year is even to surpass our achievements of this year, because 2015 marks a special anniversary for CUTEC: we will be celebrating 25 years in existence. We are planning to mark the milestone in appropriate fashion with a Colloquium and Summer Festival to be held on June 11, 2015. And you are most cordially invited to attend.

The end of the year also provides us with a welcome opportunity to express thanks. Our thanks go to all our partners and clients for their collaborative contributions, as well as to all our staff for their hard work and commitment.

I wish you all a happy New Year and all the very best for 2015.

Best regards,



Martin Faulstich

USING RESOURCES MORE EFFICIENTLY

Establishment of a regional advice network „Harz Resource Efficiency Initiative“

The response to the media event held at the CUTEC Institute on December 2, 2014 was pleasing. Many representatives of regional media attended the event to discover what goals the parties involved have set themselves, how they see the planned network operating, and how they judge the chances of successfully establishing the network.

The nine project partners coming together at the suggestion of the Harz Region Future Initiative ("Initiative Zukunft Harz") to form the Harz Resource Efficiency Initiative („Initiative Ressourceneffizienz Harz“, IRH) are: the rural district of Osterode am Harz; the rural district of Goslar; RKW Nord GmbH; the CUTEC Institute; the Technical University of Clausthal; economic development corporation Wirtschaftsförderung Region Goslar GmbH (WiReGo); Goslar regional energy and resources agency (Energie- und Ressourcen Agentur Goslar mit Energie e.V).; Göttingen regional energy agency (Energieagentur Region Göttingen e.V.); and Harz Region Future Initiative. The partners gathered to discuss the matters at hand, and subsequently signed a co-operation agreement aimed at establishing and building the planned regional network.

Signing the co-operation agreement

An initial information event will be held in the second half of 2015. The importance of the network is underscored by the fact that materials are by far the biggest cost factor for businesses, accounting for some 45% of total expenses. In view of the global shortages of fuels and raw materials, and the associated rise in prices, the efficient use of material and energy is becoming increasingly vital to business success.

Consequently, the network will focus its attentions primarily on small and medium-sized enterprises (SMEs), though businesses forming part of a larger corporate structure will also be able to benefit from the advisory services on offer. The network seeks to bundle advisory expertise from the region, for the region. It will work to encourage take-up of advice services, while at the same time creating transparency as to the quality of advice available in the region.

Energy and materials efficiency advisors around the region are now being called upon to join the network. They should already be listed as accredited advisors to the German Energy Agency (dena) or the German Materials Efficiency Agency (demea) in Berlin, or as SME advisors to KfW-Bank or LEEN-GmbH (Learning Energy Efficiency Networks in Karlsruhe).

In addition to certified advisors, engineers and specialists with skills in the field of materials efficiency from companies around our region are also being sought. They, too, can join the network, because the IRH needs all the experts it can find.

Interested parties are requested to contact Harz Region Future Initiative at:
info@initiative-zukunft-harz.de

CUTEC will of course also be glad to answer any questions you may have in relation to energy and resource efficiency. (kra)

LOOK BACK AT 2014 SUMMER SCHOOL

The CUTEC Institute this year hosted its seventh annual Fuel Cells and Batteries Summer School for students from around the state of Lower Saxony. This year's event was organised in cooperation with the Institute for Energy and Systems Process Engineering InES of the Technical University of Braunschweig.

From September 15th to 19th, 50 young scientists gathered at the Haus der Wissenschaft in Braunschweig to discover at first hand all the latest exciting developments in the highly topical fields of fuel cell and battery technology. Experts from the scientific community and industry provided presentations on theoretical principles, practical know-how and proposed solutions. The latest issues facing fuel cell and battery technology were detailed, and scientists from around Lower Saxony lectured on the fundamentals of electrochemistry, thermodynamics, materials science and energy technology. The programme also gave insights into industrial skills and expertise. Practical experimentation on fuels and batteries, as well as an excursion to the VW Development Centre in Isenbüttel, provided the attendees with a richly varied experience. A highlight, as every year, was the evening dinner, during which the participants had the opportunity to engaged in scientific dialogue with the invited speakers, or simply have a cordial chat, in a relaxed ambience.

The participants and speakers at the 2014 Summer School

The 50 available places were once again quickly booked up this year. After a richly rewarding week, having gained lots of new knowledge but also having had fun and made new contacts, the participating students were unanimous in their praise of the event. All welcomed the prospect of it returning in 2015 – and indeed planning for the eighth Summer School has already begun.

We would especially like to thank the sponsors, without whose support this successful event would not have been possible: corporate sponsors DOW Deutschland Anlagengesellschaft mbH; EWE AG; IAV GmbH; and Volkswagen AG; as well as the academic sponsors: Technical University of Braunschweig; Technical University of Clausthal; Ostfalia Hochschule University of Applied Sciences; and the Lower Saxony Energy Research Centre EFZN. And our thanks also go of course to all the speakers, as well as to all those who helped organise the event, for their hard work and commitment. (li)

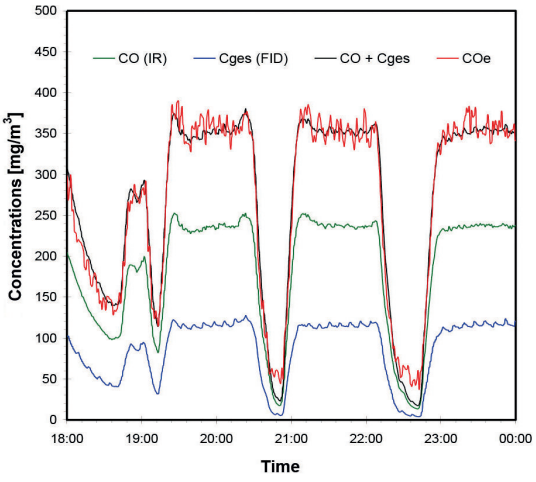
COVOCSen PROJECT

New-style sensor for continuous functional monitoring of exhaust air cleaning systems

The COVOCSen project was launched back on May 1st of this year within the Department of Thermal Processes. The aim of the project is to develop a new-style sensor for the measurement of unburnt pollutants.

Emissions of carbon monoxide (CO) and volatile organic compounds (VOCs) from many industrial processes are limited by law. Moreover, the levels of those components are key parameters in assessing the quality of the actual production processes and the function of downstream emission control systems. Exhaust air cleaning systems – such as thermal post-combustion – are prime examples.

Although the allowable emissions are limited, most systems are not subject to any mandatory continuous monitoring such as is required of waste incineration plants for example. Rather, functional monitoring is implemented on a spot-check basis in the course of recurring routine procedures. Operators are nevertheless very much interested in implementing continuous monitoring, including continuous function monitoring of their systems so that any warranty claims can be made within the specified period. The high cost of the analysers available on the market has proved a barrier to this in the past however. With two separate conventional system types – flame ionisation detectors (FIDs) for VOCs and non-dispersive infrared (NDIR) for carbon monoxide – including gas tapping, measurement gas conditioning etc., sums of around 50,000 Euro are quickly reached.



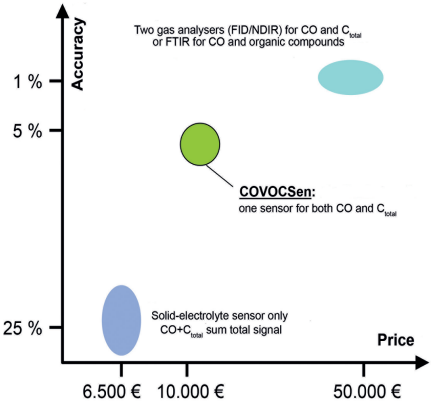
Results of preliminary testing

On the other hand, there are already some low-cost measuring probes available on the market which are capable of measuring CO, VOCs and other combustible compounds in the form of a single signal. The solid-electrolyte sensors they use are based on the fact that some ceramics become permeable to ions at high temperatures, and the ion stream resulting when a partial pressure gradient is applied – or the resultant voltage – can be measured. The oxygen sensors regulating the fuel-air mix in motor vehicles also utilise this principle.

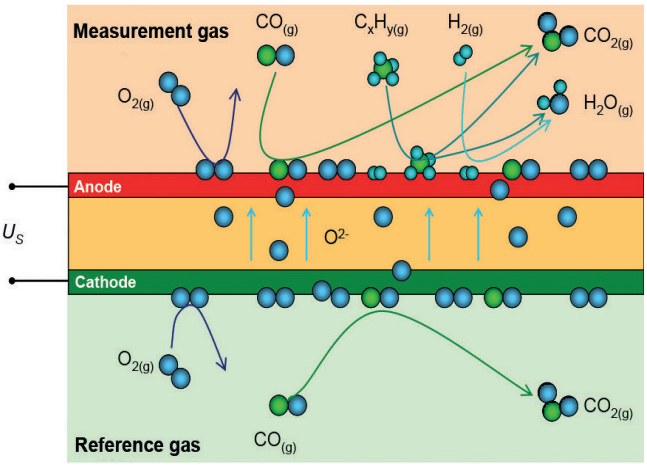
Comparative measurements in advance of the submission already demonstrated that the special solid-electrolyte sensors are highly capable – after appropriate calibration – of measuring the actual total concentration of CO and VOCs. Unfortunately this sum total signal does not give any indication as to the proportional content of the individual components. That is exactly what is of particular interest in the proposed area of application, however, because increased CO and VOC content respectively stems from different causes. In exhaust air cleaning systems, for example, high concentrations of carbon monoxide mostly result from inadequately low process temperatures, whereas increased VOC content is often caused by leaks.

The task of the project is therefore to improve the existing technology in this regard, and to separate the CO and VOC signal components so that the individual concentrations can be measured simultaneously. This is the origin of the project's name: COVOCSen – or CO-VOC sensor.

The use of comparatively low-cost solid-electrolyte sensors will significantly cut the price of the new analyser, making it affordable for the purposes cited. The resultant reductions in measurement accuracy are quite acceptable. For monitoring purposes, it is sufficient to gather data within a reliable range.



Targeted market segment



Functional principle of a solid-electrolyte sensor

Alongside actual analyser development and detailed comparative measurements against standard analysers, the project will also conduct experiments to predict the useful lives of the sensors as well as implementing final industrial validation.

The 18-month project is being run jointly with a Lower Saxony-based measuring systems vendor through the AiF Projekt GmbH company. It forms part of the Central Innovation Programme for medium-sized companies initiated by the German Federal Ministry for Economic Affairs and Energy (BMWi) pursuant to a

BMBF JOINT PROJECT "INAH" NOMINATED FOR BMWI'S 2014 GERMAN RAW MATERIALS EFFICIENCY AWARD

The joint project on Innovative Reprocessing and Agglomeration Techniques for Foundry Residues known by its German acronym "INAH" was sponsored by the German Federal Ministry of Education and Research (BMBF) through project-executing organisation Jülich/Berlin as part of the "KMU-Innovativ" innovation promotion programme for SMEs.

The project partners are: Blackballs Technology GmbH; Lhotzky + Partner Ingenieurgesellschaft mbH; Rössner Maschinenbau GmbH; SIMET GmbH; Technical University of Clausthal (Institute IFAD, IMET, IEVB); and the CUTEC Department of Metal Recycling.

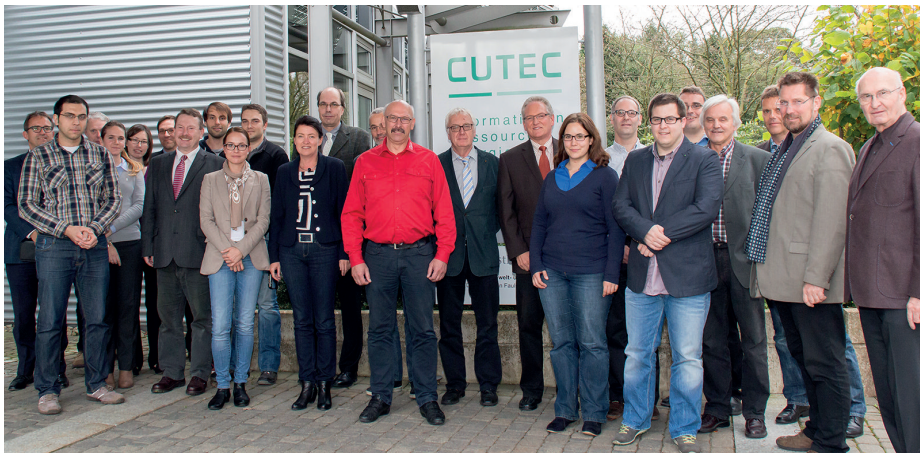
The Department of Metal Recycling led the project, contributed to its laboratory-scale development, implemented its transfer to pilot plant scale, and conducted the accompanying scientific research.

The application for the 2014 German Raw Materials Efficiency Award was submitted by industrial partner Prof. Seabra da Rocha/Blackballs GmbH. All eight nominated projects were presented at the "Rohstoffe effizient nutzen – Erfolgreich am Markt" [Efficient use of raw materials – Success on the market] conference held in Berlin on December 4th. Four companies ultimately emerged as winners of the 2014 German Raw Materials Efficiency Award. Unfortunately the INAH project was not among the award-winners. Nevertheless, we congratulate Professor Seabra da Rocha on the nomination, which was in itself a major achievement given the large number of submissions.

Official seal for the nominated companies and institutes

CUTEC's Department of Metal Recycling had in fact already won the German Raw Materials Efficiency Award for research establishments back in 2012, together with its partners (Technical University of Clausthal/IFAD; RHM GmbH; Sundwig GmbH/Andritz; XSTRATA Zink GmbH; Fritz Winter GmbH; WOB AB), for the BMBF network project on Dezincification of Steel Scrap. The prize, awarded only once each year, provided further proof of the performance capabilities of the Department of Metal Recycling and its fruitful cooperation with the Technical University of Clausthal and industrial partners. (ze)

"BUSINESSES TALK ENERGY" AT THE CUTEC INSTITUTE



Attendees at the "Businesses Talk Energy" forum hosted by CUTEC

On September 25, 2014 the CUTEC Institute hosted the "Unternehmergespräch Energie" [Businesses Talk Energy] forum. The regular events are organised by regional economic development corporation Wirtschaftsförderung Region Goslar GmbH & Co. KG and regional energy association Verein Goslar mit Energie e.V.

The CUTEC-hosted event dealt with the topics of technology transfer, opportunities for continuing professional development, working aids and grant funding to promote energy and resource efficiency.

Dr. Stefan Vodegel addressed the sold-out seminar on the possibilities the CUTEC Institute offers for local businesses in his presentation titled "Research and development services for regional business and industry in the field of resource and energy efficiency". Other presentations followed by representatives of the VDI Centre for Resource Efficiency and NBank. The event was concluded with a tour of the CUTEC Institute. (vo)

DIARY

- Hanover Industrial Fair
  from April 13 to 17, 2015.
  Visit us in hall 27 on the shared stand: "Energie und Mobilität aus Niedersachsen" [Energy and Mobility from Lower Saxony].

- 25 Years of CUTEC
  Anniversary Celebration on
  June 11, 2015
  in Clausthal-Zellerfeld

- ACHEMA 2015
  from June 15 to 19, 2015
  in Frankfurt.
  Visit us in hall 9.2, stand C68.

ECO-FRIENDLY INPUT OF NON-ESTABLISHED MATERIAL FLOWS INTO WASTE INCINERATION PLANTS

A total of 69 waste incineration plants and 36 RFD (refuse-derived fuel) powered plants around Germany play a key role in the thermal recovery of municipal waste. The industry in Germany embodies the international state of the art. Incineration capacity was fully taken up in 2014. Over the last 15 years or so, such plants have increasingly taken on the role of regional energy suppliers. Many waste incineration plants are now a vital element of distant heat or industrial steam supply networks. It must be considered, however, that volumes of waste for thermal recovery are projected to decline over the coming decades. The main reasons for this are the expected population decrease and increases in rates of material recycling. Some of the reduction in volume will be balanced by the shutdown of ageing waste incineration plants. For the additional free capacity created, waste incineration offers the opportunity to recover material flows which were previously routed elsewhere for technical or commercial reasons. In view of that trend, the German Federal Environmental Agency UBA has issued a tender for a project aimed at assessing such material flows in terms of quality and quantity. The project is tasked with assessing environmental impact, as well as pointing up potential technical difficulties. It is additionally to draw up economic feasibility studies for technical adaptations and low acceptance prices. The project must also ensure compliance with legal framework conditions. As some countries in Europe comply with the EU's prohibition on landfill dumping but do not yet have sufficient incinerating capacity of their own, a number of neighbouring countries are currently utilising German capacities. Exports to Germany will decline as those countries commission their own plants into operation. Volume and timescale scenarios need to be drawn up in this respect. At the end of the project, estimates are to be made as to the trend in capacities of German waste incineration plants with and without new potential material flows. These must incorporate population trends, population movement from the countryside to cities, expected EU and national laws and directives, as well as the effects of recycling. The CUTEC Institute won the UBA project tender in co-operation with its partner, the Fraunhofer Institute for Environmental, Safety and Energy Technology UMSICHT, Institute Branch Sulzbach-Rosenberg. The project was launched on October 1, 2014. As part of work package 1, the Department of Thermal Processes has been tasked to conduct interviews with material flow managers of operators, waste management companies and industry bodies such as the ITAD. The aim is to gather information based on practical know-how, with personal appraisal by specialists. Known studies will be additionally utilised. The response to date can be described as very good. The project will conclude with a workshop hosted by the UBA presenting the results and opening them up to interested parties for discussion. The workshop is scheduled to take place in September 2015. (vo)

The project partners

CUTEC PARTICIPATING IN EUROPE'S LARGEST RESOURCE NETWORK WITH THE SUPPORT OF THE STATE OF LOWER SAXONY'S ENVIRONMENT MINISTRY

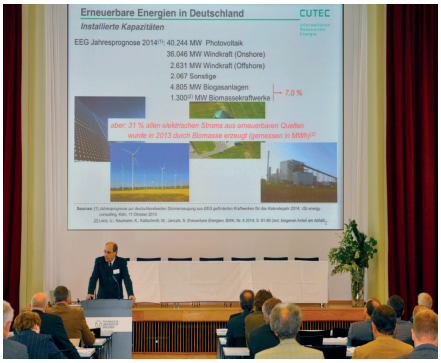
Green light for new raw materials network: The European Institute for Innovation and Technology (EIT) has this week commissioned an international consortium to establish a so-called Knowledge and Innovation Community (KIC) for the raw materials sector. 410 million Euros will be provided for the purpose over the next seven years. Backed by additional finance to a level of approximately three times as much, funding of more than 1.6 billion Euros is expected. The RawMatTERS KIC will link more than 100 European organisations in the resources field, including a number of partners from the Harz region, who will receive long-term support in maintaining their commitment from the state government of Lower Saxony.

Four strong partners from the Harz region – Recylex GmbH, H.C.Starck GmbH, the Technical University of Clausthal and the CUTEC Institute – will be key players within the Recycling Cluster. Activities will include providing a substantial boost to education and training, research and innovation in southern Lower Saxony in the field of recycling and conservation of raw materials. This will open up opportunities to establish new alliances – and above all also create new jobs – in environmental and resource technologies. The Technical University of Clausthal, the CUTEC Institute and the partner companies will be supported in their activities by the Lower Saxony Ministries of Science and Culture and of the Environment, as well as by the Ministry of Economic Affairs through the Regional Development Agency in Braunschweig. CUTEC wishes to express special thanks to the Lower Saxony Ministry of the Environment, which provided the finance enabling full membership of the RawMatTERS KIC. The State has proposed establishing a steering group to co-ordinate the further procedure. Ultimately, through the four partners – who are also members of the REWIMET e. V. organisation in Lower Saxony – many other companies, including smaller businesses, will be involved in order to extend the innovation potential to SMEs in particular. Dr. Torsten Zeller, head of the Department of Metal Recycling, is the designated CUTEC delegate, and is looking forward to representing the organisation's interests within the KIC. (ze)

CUTEC ON THE ROAD

20TH CONFERENCE ON THE USE OF REGROWABLE RESOURCES FOR ENERGY IN DRESDEN

The well-attended conference was hosted by the Technical University of Dresden for the 20th time on September 4 and 5, 2014. It was organised by the University's Institute of International Forestry and Forestry Products and its Institute of Power Engineering. The patron of the event was the State of Saxony's Minister of the Environment and Agriculture, Frank Kupfer. The keynote topic was the thermal use of biomass from cultivation, through thermal conversion, to waste gas purification. On various points during the conference, speakers expressed their dismay that the contribution of biomass was being increasingly neglected – or even viewed negatively – in policy debates.



The conference hall – view of the podium

The new German Act on Granting Priority to Renewable Energy Sources (Renewable Energy Sources Act; EEG for short) was portrayed in presentations and podium discussions as a major stumbling block. The fact that, in 2013, 31 % of electricity and 89 % of heat in Germany was produced by renewable energy from biomass is barely realised by the public at large. In his plenary presentation, Dr. Stefan Vodegel set forth the state of the art, and outlined the prospects for German biomass plants in the light of the amended EEG legislation. In the podium discussion, the audience was particularly interested by views on the future prospects for the construction and operation of new power plants. The experts were optimistic regarding the operation of existing plants. With regard to new plants, chances were seen only for very small implementations such as fixed-bed gasifiers. (vo)

PROCESSNET ANNUAL CONFERENCE IN AACHEN

The ProcessNet annual conference and the 31st DECHEMA annual conference for biotechnology was held in Aachen from September 30 to October 2, 2014. This forum for process and chemical engineering and technical chemistry saw more than 1,000 attendees from the academic and industrial spheres gather to find out about the latest developments and research results. The focus was on future trends in the fields of resources, water, energy, food and health.

Presentations were made on 23 different topics, including alternative fuels; plant engineering of the future; bioeconomics and biorefineries; chemical energy storage; and electrochemical processes. Posters were also exhibited.

The CUTEC Institute was represented by two poster contributions and two presentations, made by four of its scientists.

Poster contributions:

- Michael Niedermeiser: "Status of the development of flocculants from regrowable resources (potato starch)"
- Dr. Ottmar Schläfer: "The bio-electrochemical fuel cell (BioBZ) as a component of an energy-producing sewage treatment plant"

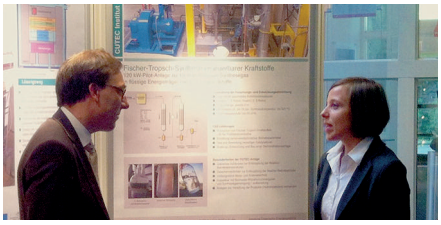
Presentations:

- Hinnerk Bormann: "Increasing efficiency by the total reprocessing of liquid manure"
- Annett Wollmann (Dipl.-Ing.): "Technology and economic viability of decentralised Fischer-Tropsch plants"

The abstracts are reproduced in the journal "CIT", September 2014, vol. 86, 9, published by Wiley-Verlag. (wo)

Annett Wollmann during her presentation

7. STATE OF LOWER SAXONY ENERGY CONFERENCE IN GOSLAR



Dialogue prior to the CUTEC presentation

The seventh State of Lower Saxony Energy Conference, organised by the Lower Saxony Energy Research Centre EFZN, was held on October 8th and 9th in Goslar. A total of 220 attendees over the two days discussed the shift in German energy policy towards renewables (the so-called "Energiewende") under the title "Alternative Energieversorgung – eine Illusion oder alternativlos?" [Alternative energy supply – an illusion or vital?]

As ever, the event began with the series of afternoon presentations in the Imperial Palace (Kaiserpfalz). Lower Saxony's Minister of the Environment, Energy and Climate Protection, Stefan Wenzel, provided an introduction to the topic. The Minister spoke about the opportunities and difficulties of the Energiewende from the Lower Saxony perspective. The State of Lower Saxony will continue to work on the Energiewende, and will be increasing its efforts in that direction.

From a European perspective, Sebastian Gras outlined the EU's objectives regarding renewable energy, relating primarily to security of supply, grid expansion and economic viability. A different perspective, from industry, was presented by Michael Riechel of Thüga AG.

The evening presentation, in a more relaxed format, before or during the gala dinner came this time from a well-known figure in Clausthal, Professor Christian Berg. On the the second day, a total of five specialist forums were held in parallel, and subsequently summarised by way of conclusion.

CUTEC is a supporter of this series of events, and was represented by an information stand on the subjects of "Renewable fuels based on the Fischer-Tropsch synthesis", "The Lower Saxony research alliance SOFC" and "The model energy system". Dr. Lindermeir, Dr. Dietrich and Werner Siemers took part in the conferences. (sie)

CUTEC ON THE ROAD

VGB CONFERENCE THERMAL WASTE UTILISATION IN KASSEL

The 2014 VGB Thermal Waste Treatment conference was held in Kassel on October 28th and 29th.

More than 70 attendees took up the invitation to hear presentations and view the accompanying exhibition setting forth the latest developments, to meet corporate and research partners, to make new contacts, and to engage in scientific dialogue with other experts in their field.

On behalf of CUTEC, Dr. Torsten Reindorf reported in his presentation on the background and objectives of the research project into the "Material flows of NH_3 in SNCR flue gas and residue processing in German waste incineration plants". The project, sponsored by the VGB research foundation, was approved in July of this year. It was profiled briefly in the last issue of CUTEC News. (rd)

ENERGIE CAMPUS NÜRNBERG

In October 2014 the CUTEC Institute and the Energy Research Centre of Niedersachsen (EFZN) visited the Energie Campus Nürnberg (EnCN). The research activities of the EFZN and the EnCN are spread along the complete energy chain. Both organizations operate on an interdisciplinary basis.

Photo: EnCN

The attendees at the co-operation meeting between CUTEC, EFZN and EnCN

The aim of the EnCN – like that of the CUTEC and of the EFZN – is to develop new technologies, which are economically viable and widely accepted by the public at large.

Professor Wolfgang Arlt was particularly delighted to welcome his colleagues Martin Faulstich and Hans-Peter Beck. The meeting was also attended by Hubert Ovenhausen (Chairman of the Board of Trustees of the EFZN, Siemens AG), Jens zum Hingst and Ann Kruse (CUTEC Institute). The main focus of the discussions was on possible co-operation in a renewables-based energy industry. Then a tour was undertaken of the Bavarian Hydrogen Center (BHC) in Erlangen. The Bavarian Hydrogen Center is devoted to developing a sustainable hydrogen sector. A key element of the research establishment's operations is the LOHC (Liquid Organic Hydrogen Carriers) demonstration plant. The attendees discussed the development, construction and operation of such storage options. (kru)

STATE GOVERNMENT OF LOWER SAXONY CABINET MEETING AT EFZN

On November 4, 2014, Professors Hans-Peter Beck and Martin Faulstich welcomed high-ranking political visitors from the state capital Hanover. The cabinet of the state government of Lower Saxony, chaired by Governor Stephan Weil, convened at the premises of the Energy Research Centre of Niedersachsen EFZN in Goslar.

At the cabinet meeting, EFZN Chairman Professor Hans-Peter Beck first gave a presentation outlining the key research areas of the organization.

State Government cabinet convenes at the EFZN – Scientists report on their work

Then Professor Martin Faulstich, in his role as Director of the CUTEC Institute, set forth the position of the Experts' The German Advisory Council on the Environment (SRU) relating to the shift away from coal as an energy source. Professor Martin Faulstich in his presentation stressed the need for a structured shift away from coal, based on consensus between ministries, local authorities, the energy industry, the scientific community, the public at large, and environmental organizations. His presentation made clear that a planned shift away from coal is essential in order to attain the climate protection goals targeted by the Federal Government. Alongside, the climate protection goals and consensus among stakeholders, security of supply must be assured by appropriate measures and instruments, such as the shaping of a smart electricity market, a minimum price for carbon certificates, and also the setting of emission limits. This must include consideration of cross-sector decarbonisation (power, heat, fuel).

After its meeting, the cabinet toured the new battery and sensor test centre on the "Energy Campus". Scientists from the EFZN, the Clausthal University of Technology and the Fraunhofer Heinrich Hertz Institute gave presentations on their work and answered the politicians' questions. (kru)

SCIENTIFIC ADVISORY BOARD

Profile in this issue: Dr.-Ing. Peter F. Tropschuh

Dr.-Ing. Peter F. Tropschuh

A few months ago German consumers voted AUDI AG the country's most sustainable company. In the "Sustainability Image Score 2014" ranking compiled by Facit Research, AUDI AG came top ahead of BMW and Hipp. A key role in that accomplishment was played by Dr. Peter F. Tropschuh. The highly experienced Corporate Responsibility professional is delighted to have received such recognition, commenting: "This top ranking affirms that our strategy is the right approach to shaping individual mobility and making our business fit for the future." It is in that context, too, that he places the future collaboration with the CUTEC Institute. He regards it as an outstanding platform for exploring joint research topics which are of interest to both sides, and explains his motivation for becoming involved in the partnership as follows: "AUDI AG has embedded the sustainability of its products and processes in its corporate strategy. As such, issues including conservation of resources, recycling and environmental process engineering are highly relevant to us. I am delighted to be part of this network, and to have the opportunity to highlight the specific challenges faced by businesses in my role as an interface point between science and industry."

Peter F. Tropschuh was born in Ingolstadt in 1958. From 1977 to 1983 he studied mechanical engineering, specialising in design and development, at the Technical University of Munich. He then worked as a member of the scientific staff in the Department of Engineering Design. It was there that he submitted his doctoral thesis in 1988 on the subject of "Computer assistance to project planning with the aid of a knowledge-based system". In the same year he joined AUDI AG in Ingolstadt, where he subsequently took up a variety of posts, including in management.

In 2006 Dr. Tropschuh joined Volkswagen AG in Wolfsburg, where he became Director of the "AutoUni" academy. He continued also to undertake scientific projects on behalf of AUDI AG. In 2011 he returned full-time to AUDI AG in Ingolstadt, where he has since headed the Corporate Responsibility, Policy and Scientific Co-operation function.

Dr. Tropschuh is a member of numerous scientific and industry bodies, including the Advisory Boards of the TÜV South technical inspectorate and the "Automobil Cluster Bayern" Bavarian automotive industry cluster. He is also Honorary Senator of the Budapest University of Technical and Economic Sciences, and lectures in trends and developments in automotive engineering in the Department of Automotive Engineering of the Technical University of Munich. (kra)

GAS BOILER AND LOCAL DISTRICT HEATING COMMISSIONED INTO OPERATION

Shortly before the long weekend of the October 3rd public holiday, a major milestone in the "Model energy system" project was commissioned into operation at the CUTEC facility. The condensing gas boiler outputting some 600 kW of heat was fully installed and connected up in the energy park machine room of the new building. From the boiler the energy route passes into the building's basement, where the various heat generators of the overall system are collected and interconnected by way of a stratified storage system. From this so-called Zortstroem distributor, the heat is transported through an underground plastic pipeline to CUTEC's heating control centre. The field below the pond had to be dug up for the local heat pipeline to be laid. For technical reasons, it was necessary to cap the district heat pipeline installed by the Stadtwerke Clausthal-Zellerfeld GmbH municipal utility and connect the new local heat pipeline to the existing infeed. As a result, the heat supply to the CUTEC building is now fully in the Institute's own hands. The staff's fears that it might start getting cold in their offices have proved not entirely true.

In addition, the latent heat store has been installed in its final location at the back of the new building. This component, too, had to be connected to the system – in this case the Zortstroem distributor – by a pipe network together with the essential safety and monitoring facilities. The storage tank is filled with hot supply water in the event of a heat surplus or as and when needed. When heat is then needed, it can be tapped from the store by way of an automated control console switch. Experience with the system will be gathered during the coming winter heating period.

Most of the work on the installation was carried out by CUTEC staff. We would like to take this opportunity to thank the staff concerned most warmly for their efforts. (sie)

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